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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shai Amir

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EXAMINER

DUDEK JR, EDWARD J

ART UNIT

PAPER NUMBER

2186

NOTIFICATION DATE

DELIVERY MODE

04/17/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent@myerswolin.com

Office Action Summary	Application No. 10/694,115	Applicant(s) AMIR ET AL.	
	Examiner Edward J. Dudek	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-48, 50-56, 68 and 80-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 38-48, 50-56, 68 and 80-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the after final amendment filed on 20 March 2008 in application #10/694115.

Claims 38-48, 50-56, 60, and 80-86 are pending and have been presented for examination.

Claims 1-37, 49, 57-67, 69-79, and 87-97 have been cancelled.

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

The numbering of the claims is inconsistent with the prosecution history in the application. Specifically, Applicant has indicated that claims 87-97 have been cancelled in the current amendment. The application as originally filed contained 91 claims, and there have been no claims added, therefore claims 92-97 never existed in the case.

Response to Arguments

Applicant's arguments, see page 10, filed 20 March 2008, with respect to the rejection(s) of claim(s) 38-48 and 68 under 35 U.S.C. § 103 as being obvious over Liu, Kobayashi and Edsall have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Liu, Kobayashi and Camble.

Applicant's arguments filed 20 March 2008 with respect to claims 50-56 and 80-86 have been fully considered but they are not persuasive.

Regarding applicants argument:

With regard to the Liu reference applicant believes the reference in combination with Edsall fails to teach each and every claimed feature as discussed below. Furthermore, it appears the Office is relying on the provisional application of Liu for showing the claimed features because the non-provisional of Liu was filed after the filing date of the present application. However, it is not clear to applicant where the provisional application to Liu is actually teaching applicant's claimed features, nor is it clear that the provisional of Liu supports the rejection in the Office Action. If the rejection is to be maintained with Liu, it is respectfully requested that the provisional application of Liu be cited and the Office Action point out where applicant's claimed features are found in the provisional application.

The Examiner believes the provisional application fully supports the rejection in the Office Action, and the rejection is therefore maintained. Every passage cited in the previous Office Action regarding the Liu reference appears almost word for word in the provisional application. As requested, the repeated rejection cites the relevant passages of the provisional application relied upon with the Liu reference.

Regarding Applicants argument:

Furthermore, with regard to independent claims 50 and 80, each claim includes a similar feature of: determining, using a check-point list, the amount of data to be transferred via a network, wherein said check-point list further defines how data should be sent from an initiator host to said storage device.

The Office Action points to Liu as teaching these claimed features. However, it is respectfully submitted that Liu describes a SATA I/O device that provides an interface to the storage devices. The SATA I/O device operates according to the SATA protocol, which provides a native data transfer to the SATA 110, i.e., each size of data chunk received from the host is transferred to the storage device.

That is, Liu does not teach determining, using a check-point list, the amount of data to be transferred and wherein said check-point list further defines how data should be sent from an initiator host to said storage device, as specifically claimed in claims 50 and 80.

As is claimed the check-point list is utilized in determining the amount of data and further defines how data should be sent from an initiator host to said storage device. Applicant respectfully submits that the features of the determining using such a check point list as claimed is not suggested in Liu or Edsall. Thus, it is respectfully submitted that the combination of Liu and Edsall fail to teach or suggest each and every claimed feature and this rejection should be withdrawn.

The Examiner respectfully disagrees. The cited section of Liu discloses that each generated IO request defines parameters of the IO operation. These parameters include the destination address, length, and the command indicating the operation to be performed. The length parameter would define the amount of data transferred, since more data would have a longer length, and less data would have a shorter length. The command indicating the operation to be performed would define how the data is sent from an initiator host to a storage device. The rejection is maintained as repeated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38-48 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (**U.S. Patent Application Publication #2005/0005044 / Provisional Application #60/483926**) in view of Camble et al (**U.S. Patent Application Publication #2003/0126360**) and Edsall et al (**U.S. Patent Application Publication #2003/0172149**).

Note: Based on Applicants request, regarding the Liu reference, citations in **BOLD** are directed toward the non-provisional published application, and citations in **BOLD ITALIC** are directed toward the provisional application that the non-provisional application claims priority to.

As per claim 38: Liu discloses a method for performing a plurality of virtualization services, said method being further operative to perform said virtualization services within a data path, said method comprises the steps of: receiving a logic command to be performed on at least one virtual volume, said logic command including at least a virtual address (**see [0045] / Page 6 last ¶**); scheduling said logic command for execution (**see [0053] / Page 8 4th full ¶**), wherein said logic command is at least a SCSI command comprising the steps of: receiving said logic command from said initiator host (**see [0045] / Page 6 last ¶**); parsing said logic command to determine at least said virtual address and said logic commands type (**see [0051] / Page 8 2nd full ¶**); performing a check to determine is said logic command is valid (**see [0085] / Page 58 2nd full ¶**); generating a response if said logic command is invalid, (**see [0079] / Page 57 top**); and generating a data transfer request (**see [0079] / Page 57 top**); translating, in one pass, said logic command to a list of physical commands (**see**

[0051]-[0053] / Page 8 2nd full ¶), wherein each of said physical command is targeted to a different storage device (**see [0047] / Page 7 2nd full ¶**, *when the storage devices are set up as a mirror, there would be one write command that is sent to each drive that makes up the mirror*); determining the amount of data to be transferred via a network (**see [0081] / Page 57 2nd full ¶**); and, executing said physical commands on said storage devices (**see [0084] / Page 58 1st full ¶**). Liu fails to disclose determining if said initiator host is authorized to send said logic command, and denying the logic command if the host is unauthorized. Camble discloses a method to determine if the initiator host is authorized to send the command to the storage system based on the WWN or the ID of the host (**see [0023] and 0027]**). This is done to implement some security in the system so that it is possible to prevent specific data from being available to all users of the system (**see [0023]**). Using the command sent from the host to determine if the host is authorized is more efficient and less prone to error than manually configuring switches in the storage network (**see [0020]**). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Liu to add security, as disclosed by Camble, to make management of the storage system easier, and to allow the user to use a restrict some users from seeing all the data on the storage system for security purposes, as disclosed by Camble. The combination of Liu and Camble still fail to disclose adding the logic command to a host-LU queue. Edsall discloses storing frames that are going to be transmitted to the storage devices in a queue (**see [0059]**). Storing the packets in a queue as opposed to directly transmitting them to the storage device

allows the storage network to implement a quality of service (**see [0059]**). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the combination of Liu and Camble, to include a queue to store the packets that are going to be sent to the storage devices, as disclosed by Edsall, to allow the system to implement a quality of service guarantee.

As per claim 39: the combination discloses said response command comprises and iSCSI service response code indicating the type of generated error (**see Liu [0050] / Page 20 last ¶**, *since the system uses the iSCSI protocol, it is inherent that the response would be in the form of an iSCSI service response code*).

As per claim 40: the combination discloses said host-LU queue comprises logic commands requested to be executed by said host on said LU (**see Edsall [0058]-[0059]**).

As per claim 41: the combination discloses selecting said logic command to be executed from said host-LU queue (**see Edsall [0059]**, *since all the commands are buffered in the queue, it is inherent that the command would be selected from the queue to be executed*).

As per claim 42: the combination discloses a selection using a weighted round robin (**see Edsall [0059]-[0060]**, *there are multiple queue to choose the instruction from, since there is a quality of service issue, the packets in the higher priority queue will be weighted heavier to be chosen first*).

As per claim 43: the combination discloses said command type is a read command (**see Liu [0052] / Page 8 3rd full ¶**).

As per claim 44: the combination discloses said amount of data to be transferred is determined by an available space parameter (**see Liu [0081] / Page 57 2nd full ¶**).

As per claim 45: the combination discloses said available space parameter defines the number of data bytes to be sent to the host (**see Liu [0081] / Page 57 2nd full ¶**)).

As per claim 46: the combination discloses accessing a storage device using a physical address (**see Liu [0055] / Page 9 1st full ¶**); retrieving from said accesses storage device the number of bytes designated in said available space parameter (see **Liu [0052] and [0081] / Page 8 3rd full ¶ and Page 57 2nd full ¶**); sending the retrieved data to said host (**see Liu [0052] / Page 8 3rd full ¶**); and repeating said steps until all data is read from said storage device (**see Liu [0052] / Page 8 3rd full ¶**, *it is inherent the system would continue reading the data off of the storage device and sending it to the host until all the data is retrieved*).

As per claim 47: the combination discloses said physical commands are executed in parallel (**see Liu [0048] / Page 7 3rd full ¶**).

As per claim 48: the combination discloses said command type is a write command (**see Liu [0053] / Page 8 4th full ¶**).

As per claim 68: Liu discloses computer executable code for performing a plurality of virtualization services stores on a recordable media, said computer executable code being further operative to perform said virtualization services within a data path, said code comprises the steps of: receiving a logic command to be

performed on at least one virtual volume, said logic command including at least a virtual address (**see [0045] / Page 6 last ¶**); scheduling said logic command for execution (**see see Liu [0053] / Page 8 4th full ¶**), wherein said logic command is at least a SCSI command comprising the steps of: receiving said logic command from said initiator host (**see [0045] / Page 6 last ¶**); parsing said logic command to determine at least said virtual address and said logic commands type (**see [0051] / Page 8 2nd full ¶**); performing a check to determine is said logic command is valid (**see [0085] / Page 58 2nd full ¶**); generating a response if said logic command is invalid, (**see [0079] / Page 57 top**); and generating a data transfer request (**see [0079] / Page 57 top**); translating, in one pass, said logic command to a list of physical commands (**see [0051]-[0053] / Page 8 2nd full ¶ to page 8 4th full ¶**), wherein each of said physical command is targeted to a different storage device (**see [0047] / Page 7 2nd full ¶**, *when the storage devices are set up as a mirror, there would be one write command that is sent to each drive that makes up the mirror*); determining the amount of data to be transferred via a network (**see [0081] / Page 57 2nd full ¶**); and, executing said physical commands on said storage devices (**see [0084] / Page 58 1st full ¶**). Liu fails to disclose determining if said initiator host is authorized to send said logic command, and denying the logic command if the host is unauthorized. Camble discloses a method to determine if the initiator host is authorized to send the command to the storage system based on the WWN or the ID of the host (**see [0023] and 0027]**). This is done to implement some security in the system so that it is possible to prevent specific data from being available to all users of the system (**see [0023]**). Using the command sent from the host to

determine if the host is authorized is more efficient and less prone to error than manually configuring switches in the storage network (**see [0020]**). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the system disclosed by Liu to add security, as disclosed by Camble, to make management of the storage system easier, and to allow the user to use a restrict some users from seeing all the data on the storage system for security purposes, as disclosed by Camble. The combination of Liu and Camble still fail to disclose adding the logic command to a host-LU queue. Edsall discloses storing frames that are going to be transmitted to the storage devices in a queue (**see [0059]**). Storing the packets in a queue as opposed to directly transmitting them to the storage device allows the storage network to implement a quality of service (**see [0059]**). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified the combination of Liu and Camble, to include a queue to store the packets that are going to be sent to the storage devices, as disclosed by Edsall, to allow the system to implement a quality of service guarantee.

Claims 50-56 and 80-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (**U.S. Patent Application Publication #2005/0005044 / Provisional Application #60/483926**) in view of Edsall et al (**U.S. Patent Application Publication #2003/0172149**).

Note: Based on Applicants request, regarding the Liu reference, citations in **BOLD** are directed toward the non-provisional published application, and citations in

BOLD ITALIC are directed toward the provisional application that the non-provisional application claims priority to.

As per claim 50: Liu discloses a method for performing a plurality of virtualization services, said method being further operative to perform said virtualization services within a data path, said method comprises the steps of: receiving a logic command to be performed on at least one virtual volume, said logic command including at least a virtual address (**(see [0044] and [0051] / Page 6 Detailed Desc ¶ 3, it is inherent the command would be a virtual command and contain a virtual address since the storage system, as seen by the host, is a virtual system)**); translating, in one pass, said logic command to a list of physical commands (**(see [0055] / Page 9 1st full ¶)**), wherein each of said physical commands is targeted to a different storage device (**(see [0048] / Page 7 3rd full ¶)**); determining using a check point list the amount of data to be transferred via a network (**(see [0081] / Page 57 2nd full ¶)**); wherein said check point list further defines how data should be sent from an initiator host to said storage devices (**(see [0049]-[0050] / Page 20 last ¶, the iSCSI and SATA standards define how the data is to be sent across the links of the system to the storage devices)**); executing said physical commands on said storage devices (**(see [0087] / Page 59 1st full ¶)**). Liu fails to disclose scheduling said logic command for execution. Edsall discloses storing frames that are going to be transmitted to the storage devices in a queue (**(see [0059])**). Storing the packets in a queue as opposed to directly transmitting them to the storage device allows the storage network to implement a quality of service (**(see [0059])**). It would have been obvious to a person having ordinary skill in the art to which said subject matter

pertains to have modified Liu, to include a queue that allows commands to be scheduled and to store the packets that are going to be sent to the storage devices, as disclosed by Edsall, to allow the system to implement a quality of service guarantee.

As per claim 51: said check point list comprises a linked list of data chunks (**see [0066]-[0068] / Page 14 last ¶ to Page 15 1st full ¶**, *the data is sent in multiple packets, and the packets must be associated with each other to allow the data to be put back together when it is received on the other end*).

As per claim 52: filing at least one data chunk with said data retrieved from the network (**see [0066]-[0068] / Page 14 last ¶ to Page 15 1st full ¶**, *the data is put into packets to be transmitted*); accessing said storage device using a physical address (**see [0081] / Page 57 2nd full ¶**); writing said data chunk to said accessed storage device (**see [0053] / Page 8 4th full ¶**); and, repeating said steps for all data chunks in said check point list (*it is inherent that the steps would be repeated until all the data that has been sent out in the packets is written to the storage devices*).

As per claim 53: said physical commands are executed in parallel (**see [0048] / Page 7 3rd full ¶**).

As per claim 54: said physical commands are constructed in a data structure (**see [0066]-[0068] / Page 14 last ¶ to Page 15 1st full ¶**).

As per claim 55: said data structure further includes a pointer to said storage device (**see [0051] / Page 8 2nd full ¶**, *the command is parsed and the addresses are translated, therefore the physical address would be the pointer to the storage device*).

As per claim 56: said alternative command link links between at least two physical commands that can be executed in parallel (**see [0087]-[0088] / Page 59 1st and 2nd full ¶** , *the system uses a RAID configuration, therefore, it is inherent that there is a data structure that indicates what commands can be executed in parallel to fully utilize the increased throughput that a RAID system provides*).

As per claim 80: Liu discloses a computer product stored on a computer-readable medium comprising software instructions operable to enable a computer to perform a process for performing a plurality of virtualization services, said process being further operative to perform said virtualization services within a data path, said code comprises the steps of: receiving a logic command to be performed on at least one virtual volume, said logic command including at least a virtual address (**see [0044] and [0051] / Page 6 Detailed Desc ¶ 3 and Page 8 2nd full ¶**, *it is inherent the command would be a virtual command and contain a virtual address since the storage system, as seen by the host, is a virtual system*); translating, in one pass, said logic command to a list of physical commands (**see [0055] / Page 9 1st full ¶**), wherein each of said physical commands is targeted to a different storage device (**see [0048] / Page 7 3rd full ¶**); determining using a check point list the amount of data to be transferred via a network (**see [0081] / Page 57 2nd full ¶**); wherein said check point list further defines how data should be sent from an initiator host to said storage devices (**see [0049]-[0050] / Page 20 last ¶**, *the iSCSI and SATA standards define how the data is to be sent across the links of the system to the storage devices*); executing said physical commands on said

storage devices (**see [0087] / Page 59 1st full ¶**). Liu fails to disclose scheduling said logic command for execution. Edsall discloses storing frames that are going to be transmitted to the storage devices in a queue (**see [0059]**). Storing the packets in a queue as opposed to directly transmitting them to the storage device allows the storage network to implement a quality of service (**see [0059]**). It would have been obvious to a person having ordinary skill in the art to which said subject matter pertains to have modified Liu, to include a queue that allows commands to be scheduled and to store the packets that are going to be sent to the storage devices, as disclosed by Edsall, to allow the system to implement a quality of service guarantee.

As per claim 81: said check point list comprises a linked list of data chunks (**see [0066]-[0068] / Page 14 last ¶ to Page 15 1st full ¶**, *the data is sent in multiple packets, and the packets must be associated with each other to allow the data to be put back together when it is received on the other end*).

As per claim 82: filing at least one data chunk with said data retrieved from the network (**see [0066]-[0068] / Page 14 last ¶ to Page 15 1st full ¶**, *the data is put into packets to be transmitted*); accessing said storage device using a physical address (**see [0081] / Page 57 2nd full ¶**); writing said data chunk to said accessed storage device (**see [0053] / Page 8 4th full ¶**); and, repeating said steps for all data chunks in said check point list (*it is inherent that the steps would be repeated until all the data that has been sent out in the packets is written to the storage devices*).

As per claim 83: said physical commands are executed in parallel (**see [0048] / Page 7 3rd full ¶**).

As per claim 84: said physical commands are constructed in a data structure
(see [0066]-[0068] / Page 14 last ¶ to Page 15 1st full ¶).

As per claim 85: said data structure further includes a pointer to said storage device **(see [0051] / Page 8 2nd full ¶, the command is parsed and the addresses are translated, therefore the physical address would be the pointer to the storage device).**

As per claim 86: said alternative command link links between at least two physical commands that can be executed in parallel **(see [0087]-[0088] / Page 59 1st and 2nd full ¶, the system uses a RAID configuration, therefore, it is inherent that there is a data structure that indicates what commands can be executed in parallel to fully utilize the increased throughput that a RAID system provides).**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward J. Dudek whose telephone number is 571-270-1030. The examiner can normally be reached on Mon thru Thur 7:30-5:00pm Sec. Fri 7:30-4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2186

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matt Kim/
Supervisory Patent Examiner, Art
Unit 2186

/E. J. D./
Examiner, Art Unit 2186
April 9, 2008